

Brush (8.7)



On the Coincident Geographical Distribution of Tuberculosis and Dairy Cattle.

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By E. F. BRUSH, M.D., ✓

MOUNT VERNON, N. Y.

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If it can be shown by reputable authorities that the geographical distribution of inbred dairy cattle is coincident with the geographical distribution of human tuberculosis, there is a reasonable presumption that these phenomena stand to each other in the relation of cause and effect. I am well aware that the doctrine, started by Wells, that malarial diseases are antagonistic to pulmonary consumption, appeared so plausible on its first announcement that several other scientific men adopted the theory, and even at the recent congress for the study of tuberculosis, held in Paris, the doctrine was again advanced by De Brun, of Beyrout, and sustained by Picot, of Egypt, after it had been entirely abandoned by such men as Hirsch and others, who, like him, had made the whole inhabitable earth their field of observation. This theory, like many another

weak theory, was based on observations confined to a limited area and a limited length of time. To avoid this error, it has been my endeavor to extend my observations to every known inhabited portion of the globe, and to all periods of time, recent or remote; for it is impossible to study a disease like tuberculosis without a proper understanding of all the changes that have taken or are taking place in each country, because tuberculosis is slower and more uncertain in its development than the other common contagious or infectious diseases. One of the greatest disturbing elements I have found in the study of the geographical distribution of tubercular consumption is in the medical reports of the British army and navy, because, in countries enjoying an immunity from this disease previous to the invasion of these forces, many of the invaders, after the invasion, suffer from an attack, and often die from pulmonary consumption which they had acquired before leaving their native land; and consequently the statistics show deaths from pulmonary phthisis in the country, and thus rob it of its reputation for immunity, notwithstanding the fact that the natives themselves retain their exemption. This fact may be alleged as a refutation of the popular theory of the day—that climatic conditions stand in a causative relation to tubercular consumption, for many advocates of this theory imagine (consistently, if the theory were correct) that where climatic conditions form an aetiological factor, all residents of a country enjoying immunity by reason of its climate would be exempt. This is not so. Only those who are not infected are exempt; consequently we must look for some source of infection. Undoubtedly climatic and hygienic conditions favor the devel-

opment of the disease in a human subject exposed to infection, and therefore the first and greatest question for us to answer, if we can, is, Whence comes the contagion? Is it indiginous in any of our domestic animals? No one denies, when a human subject suffers from an attack of glanders, that the disease was acquired from a horse; neither do we question the derivation of an attack of hydrophobia in a human subject; and we know that many other diseases are directly derived from some of our domestic animals. Now, if we were to take a single country like our own, and find that just in proportion as dairy cattle abound in a given community so does tuberculosis prevail, this might be a mere coincidence; but if we take the entire world and find the same existing connection between the two, these accumulated coincidences amount to a presumption that the connection is that of cause and effect. It seems to me very easy to settle the question whether the dairy cow does derive the contagion from us, as some thoughtlessly allege, or no. The only possible way in which a cow could acquire the contagion would be from its attendant, and surely, even if that attendant were affected, the only thing the cow could derive the disease from would be his breath or his sputa, and this in the proportion of one man to fifteen or twenty animals; the attendants, too, may or may not be affected, while in every dairy the percentage of animals affected by tuberculosis is from five to twenty-five per cent. Now, the danger the other way is straight and plain, because the human subject absorbs the entire animal, drinking its secretion while this lasts, and finally eating the animal up. Further, we find communities without pulmonary tuberculosis who have not dairy

cattle, and we find also communities that have been exempt previous to the introduction of dairy cattle.

Here let me say that I wish, above all things, to avoid any appearance of having enlisted in the army of "alarmists." If the presence of tuberculosis were simply a danger that could not be avoided, and were to be threatening the entire human race, as many would have us believe, it would be better to let the question alone entirely. There are many people, both professional and lay, who cannot take a calm view of a danger; they must either approach it blindfold or else must rush for it with screaming terror that alarms every one within their hearing. Thus we see at the present day sanitarians and health authorities urging the isolation of the unfortunate consumptive, the destruction of his clothing and everything connected with him, seemingly assuming that the human race itself develops the venom that is destroying it, like the scorpion that stings itself to death. I do not attempt to deny that it is possible for one human subject to convey the infection to another, but I think this danger very remote in comparison with the prime danger of bovine infection. If we take countries like Algiers and Egypt—where the tubercular bovine is still absent, but the human consumptive present, and the native population still exempt—we surely see that the danger of contagion from human to human is not imminent; while, on the other hand, if we take countries like Madeira, Australia, and the Sandwich Islands, we find very plainly that the introduction of inbred dairy cattle tubercularizes the natives. I do not mean to imply that every one who drinks milk from tubercular cows will become tubercular, for, if

this were a fact, instead of the deaths from pulmonary consumption forming one seventh of the whole mortality, the great majority of civilized races would have become extinguished by the disease. I have known many cases of children and adults taking for years the milk of tubercular cows and yet exhibiting no symptoms of tubercular infection. We must always remember that some other systemic condition is necessary as well as the germ for the development of this disease; scrofulosis, temperature, certain hygienic or climatic conditions that tend to lower resistance, are all factors in the causation of a susceptibility to infection. This susceptibility, arising from any or all of the causes enumerated, may be present in some individuals in a community, and, unless the inbred dairy cow is a producer of food for that community, these cases, be they more or less numerous, will not suffer from tubercular consumption. There are localities with a rigorous climate, resulting from their altitude, where dairy cattle cannot be closely inbred, because inbred cattle could not stand the severity of the climate, and they are not, by reason of their breeding, tubercular. Such animals are not deemed by the modern breeder as the best dairy animals, for, requiring, by reason of their vigor and robustness, more of the food that they consume for their own nutrition, they have less of this food available for making milk. In the Highlands of Scotland and the Hebrides, where these creatures abound, the countries are not known as dairy countries, neither are they tubercular. It is significant that in the great dairy countries, such as England, Ireland, and Denmark—in fact, wherever the dairy is one of the national industries—the prevalence of tubercular

consumption is a settled fact, which requires no further consideration on our part. In those countries, however, where there is no settled dairy industry, and the habits of the people, are opposed to the care of dairy cattle, the prevalence of phthisis is rare or entirely absent. It is only in these countries that a doubt exists as to the extent to which phthisis occurs.

Now let us look at China. Here is a nation peculiar, to our notions. The reigning dynasty and high officials are of Tartar blood; the bulk of the people are pure Chinese. Andrew Wilson, who made a trip through China and Thibet, and published his book in 1875, says: "It is very extraordinary that . . . the Chinese should so entirely eschew the use of milk in every shape; at Lassa the pure Chinese do not take any milk, and the reason they gave for not doing so was that milk made people stupid. The Chinese may have got this idea from the fact that the Tartars, who are necessarily milk drinkers and eaters of dried milk and buttermilk, are a very stupid people."* Pumpelly, who traveled extensively in China under the auspices of the government, says: "Great as is the variety of food in the Chinese cuisine, some things are missed by the traveler—such as bread, butter, and milk. A little milk is sold."† The same writer adds, respecting the city of Pekin: "During the winter months this city has no rival in the world in the abundance and variety of the game and domestic meats with which its market is stocked. It receives large quantities of good beef from Mongolia."‡ I have abundance of testimony to

* The Abode of Snow, New York, 1875, p. 197.

† Across America and Asia, New York, 1870, p. 302.

‡ Across America and Asia, p. 274.

the same effect, as many travelers have written relating to this country. Of course, there is nothing in this that indicates how their cattle were bred, or how much milk they consumed, but this and all other testimony emphatically indicates that the pure Chinese, of which the poorer classes are entirely made up, do not drink milk, while the Tartars, the ruling and military class, do get milk and beef; and I can show from reputable medical authority in China that, of these two classes, the former are the non-tubercular when the disease shows itself in that country. Thus Dr. Wang, a Chinese physician educated in Edinburgh, where he had undoubtedly been taught that climatic, hygienic, and dietetic conditions were the causes of pulmonary consumption, writes concerning diseases of the chest in China as follows: "The rarity of consumption among the country people and the greater exemption from it of the laboring class in the city, notwithstanding that they are badly housed and badly fed, must be attributed to their exercise in the open air. . . . Still, I cannot quite understand why phthisis is not more prevalent than it is among them, especially the country poor, whose food often seems not more than half sufficient to support life." In regard to Canton, Dr. Wang says: "Phthisis is tolerably prevalent, but by no means so common as in Europe and America."* Of course, Canton cannot be looked at like the rest of China, for seaport towns are afflicted with imported cases, even when the disease is not indigenous. Dr. Jamison† says: "The testimony of all foreign practitioners in China who have written on the subject is unanimous as to the

* Dobell's Reports, vol. iii, 1877, pp. 33, 34.

† *Ibid.*, vol. i, 1875, p. 283.

rarity of phthisis originating here among foreigners; every instance of chronic phthisis which has come under my care has been imported." Thus the statistics of this city cannot be included in the history of the disease in China. We see, then, that among the poorer class pulmonary consumption is absent or rare, while among the better class of Tartar Chinese phthisis is not an uncommon disease. Thus Surgeon-General Gordon dwells on "the frequent occurrence of phthisis among the better classes at Tien-tsin, especially among women."* Here, of course, are the classes that get the milk and the meat. It is very interesting to read the reports of medical men regarding phthisis in China, and the different reasons by which they endeavor to explain its rarity. Mr. Porter Smith says: "Supposing phthisis to be rare, it cannot be attributed to the absence of a special tubercular diathesis among the Chinese"; and Dr. Reid, after enumerating the supposed causes of phthisis, says: "If consumption did not follow as a consequence of all this, we should have a result different from what has been observed in other parts of the world where like predisposing causes are found, . . . or that some other conditions exist that modify or neutralize them." The before-quoted Dr. Jamison says that bronchial catarrh is exceedingly common and often simulates phthisis.

Here, then, we have a country with two classes—one milk-drinkers and the other non-milk-drinkers—and medical authorities have not been able to assign an acceptable reason for the prevalence of phthisis in one class and not in the other, where the commonly received predisposing causes exist to the greatest extent.

* Dobell's Reports.

Let us now direct our attention to regions where cattle abound, but not as inbred dairy stock, and where, consequently, milk is not an article of diet. Such is South America. "In Colombia the practice of milking cows was laid aside owing to the great extent of the farms and other circumstances. In a few generations, M. Rollin says, the natural structure of parts, and withal the natural state of the functions, has been restored. The secretion of milk in the cows of this country is only an occasional phenomenon and contemporary with the actual presence of the calf. If the calf dies, the milk ceases to flow."* Holden,† in his interesting book on this country, says that butter is unknown, milk only occasionally used and only extracted from the cows when they have their calves with them, and always boiled. This author also adds, in his chapter on diseases in this country: "There is little or no consumption. I do not recollect of a single case." As to the Argentine Republic; Consul Baker, of the United States, writes in the *Western Dairy Journal*, "It may seem paradoxical, yet it is true, that, while the Argentine Republic contains twelve millions of horned cattle, it produces neither butter nor cheese; such a thing as a dairy farm is unknown; such a thing as butter-making, in the true sense of the word, is a myth; such a thing as a cheese factory, if we except a cheap curd produced in Goya, has never been attempted. In this immediate neighborhood you may or may not find milk enough for your coffee, but elsewhere no one, with rare exceptions, keeps a milch cow; butter, if used at all, has, until very recently, been brought from

* Prichard, Nat. Hist. of Man, London, 1843, p. 34.

† Holden, New Granada, New York, 1857.

Italy; of late, unsalted butter, the work of Spanish Basques, near Buenos Ayres, has been finding its way to market. . . . Not long ago I visited a ranch stocked with fifteen thousand cattle, and we did not have a mouthful of butter for our bread, while our coffee was seasoned with condensed milk from Illinois." We find, from the writings of Mantegazza on the health of this country, quoted by Hirsch, that there has been, within the last fifty or sixty years, a diffusion of phthisis along the coast of this republic, principally among the negroes and mulattoes; but in the interior and mountainous parts there is an exemption. Of course, in the case of phthisis along the coast, unless the imported cases are separated from the indigenous cases, the value of this evidence has no weight in our argument. It might be noticed that the invasion of phthisis on the coast coincides very nearly with the independence of the country and the accompanying admission of foreigners, while in the interior, where the natives are more numerous, immunity from the disease prevails.

I have in a previous paper cited the facts relating to Ecuador, and the remarkable result that the natives, where they do not use milk, are exempt from pulmonary tuberculosis. I have also in a previous paper alluded to the absence of phthisis in Egypt, where the indigenous inhabitants did not make use of the milk of inbred dairy cattle. The conclusions I arrived at at that time were derived from my reading of the accounts of that country given by various travelers; and since then I have written to Dr. J. A. S. Grant, Bey, who has favored me with the following communication, dated September 3, 1889: "With respect to Egypt, we are almost exempt

from tuberculosis unless among the black people and foreigners. The Copts and Arabs are remarkably free from phthisis pulmonalis. I think buffalo milk is the only staple of that kind supplied to the villages, but I know that in the large towns there are European cows." This shows plainly that the natives do not breed dairy cattle and are exempt from pulmonary tuberculosis, while in the towns it is probable that the European cows mentioned in the bey's letter supply the milk to the foreigners.

Like Egypt, all the rest of northern Africa seems to be exempt from tuberculosis. Thus regarding Morocco, a country to which I have not before alluded and which was thoroughly explored by Dr. Rohlfs in 1861, who adopted the habits and manners of the natives, acting as a physician both among the people and in the army, he writes in his book: "Diseases of the lungs are scarcely known in Morocco,"* and in enumerating the prevailing diseases he omits pulmonary consumption or phthisis entirely from the list; and he also says "the animals of the Draa oasis are fine and similar to those in Morocco, such as the horse, ass, mule, and goat; cattle are not common. The sheep in the Ternate provinces are woolless."† He speaks only of sheep's milk as used for food in the country.

Taking a square of ten degrees of longitude and latitude, making the geographical portions nearly identical, we have in this square Morocco, Portugal, and Spain. Now, these latter countries were mostly in the possession of the Moors for centuries, and although they are classed among the civilized races, there are many remains of

* Rohlfs, *Adventures in Morocco*, London, 1874, p. 83.

† *Ibid.*, p. 348.

Moorish customs and culture still surviving. They are an agricultural people, and the dairy business is one of the agricultural pursuits.* According to Brandt, quoted by Hirsch, consumption is prevalent in this country. This condition of affairs applies also to Spain, as these two countries are usually classed together. Now, it must be granted that the geographical differences between these countries and Morocco are not sufficient to account for the prevalence of pulmonary consumption in the one and its absence in the other, the presence of dairy cattle in one and not in the other is probably the most marked and significant difference. This difference will be found everywhere in the world where cattle are bred for the sole purpose of producing milk or early matured beef.

I am very firm in my conviction that cattle can be bred in such a manner that they will be neither scrofulous nor tuberculous, and in these respects not dangerous to the human race. After due deliberation and serious study, both as a physician and as a cattle breeder, I am firmly of the opinion that the blessings conferred upon us by the bovine tribe far outweigh the burden of the disease which they have entailed on us. When I read of countries that have no tuberculous food-producers, and consequently enjoying a total immunity from this disease, I remember at the same time that they suffer from still more grievous afflictions, both from the lack of the food furnished us and from the presence of disease in some form derived from their own cattle. If it were impossible to improve our own domestic cattle in regard to their own and our health, I

* Oswald Crawford, Portugal, Old and New, New York, p. 155.

should, I repeat, be in favor of letting the matter rest as it is. Deeming it, however, quite possible to breed our animals without any scrofulous taint, and, in lieu of the burden of disease, assume the burden of a heavier financial expense, I earnestly urge a reform.

The foremost cattle breeders have aimed at producing an artificial animal, capable, when bred for beef, of early maturity and early fecundity; and, when bred for the dairy, all other considerations were made subsidiary to an abundant flow of milk. It would appear to these men abject foolishness to breed an animal for strength, health, and robustness with a smaller yield of milk. They would not deem it an improvement to breed an animal that did not mature early, and whose dam would not produce a calf till she was three years old. But only by this method can we stamp out tuberculosis in our beef and dairy animals, and I am convinced that legislative action will be necessary to keep the breeders in this line, for it is one of the hardest things in the world to upset a recognized commercial system. Thus the question is focused: "Are we willing to pay more for beef and dairy products, and throw off the incumbrance of disease, or let the matter remain as it is—an abundant supply of cheap milk and cheap beef?"

